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Glyphosate-resistant common ragweed confirmed in Arkansas

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The implication of finding another weed (in addition to horseweed) with tolerance to glyphosate has been somewhat a cause for alarm in weed science circles.

By Bob Scott

You may recall an article several months ago in the Delta Farm Press where I discussed the discovery of a ?suspected? glyphosate-tolerant population of common ragweed in Arkansas. At the time that article was written we had just completed several field observations on this population that left us very suspicious that it might be resistant.

In our field studies, we observed common ragweed plants that survived multiple applications of 1.0 to 2.0 pounds per acre or more of glyphosate herbicide. However, at that time we could not confirm the presence of a resistant biotype.

Factors such as some of the plants already being chlorotic (yellow) and partially controlled from previous applications of glyphosate, and the size of the ragweed being too large left some doubt in our minds that needed clarification over the winter in greenhouse studies or next spring in the field.

Since the publication of that first article on glyphosate-resistant ragweed, seeds and young plants were harvested from the field this fall and taken to the greenhouse for observation. These plants and seed were grown and sprayed with different rates and timings of glyphosate. In those studies, varying levels of control was observed, which we believe indicates a segregating resistant population.

By this I mean both susceptible and varying degrees of resistant plants from the same sources. This is to be expected in early detection of herbicide resistant weed populations. Control ratings ranged from 0 to 100 percent with rates as high as 1.0 pound of active ingredient per acre. The ragweed plants sprayed ranged from 3 to 6 nodes (4 to 8 inches).

This rate normally provides 80-100 percent control of susceptible common ragweed. So, at this time we feel that we can confirm the presence of a glyphosate-resistant population of common ragweed in Jackson county Arkansas. The graduate student responsible for this work is Chad Brewer. He has decided to work on this weed for his Ph.D. dissertation, under the direction of Dr. Dick Oliver in Fayetteville.

While the discovery of this population is interesting, there are alternative control measures available for common ragweed. Also, the circumstances in which this population developed are not all that common. The field has been farmed dryland, no-till and kept in a soybean followed by grain sorghum rotation for at least the past 6-7 years.

It has received annual burn-down applications of glyphosate in all crops. So the selection pressure has been intense. This population of common ragweed poses only a small threat to soybean production in Arkansas at this time. However, the implication of finding another weed (in addition to horseweed) with tolerance to glyphosate has been somewhat a cause for alarm in weed science circles.

Most are concerned over what weed will be next. If, for example, the next weed discovered were Palmer amaranth, common cocklebur or a grass weed, then there could be some serious impacts on soybean farming. This has motivated our weed group to propose and plan some studies to revisit controlling some of these more difficult weeds,

especially Palmer amaranth, without the use of glyphosate.

Our research on common ragweed from this point forward will focus on alternative control measures, including both burn-down and in-season options. We will evaluate conventional herbicides alone and in combination with glyphosate. In addition, more studies will be conducted to determine what glyphosate rate (if any) will control these ragweed plants and the method or resistance.

It is of concern that of the weeds known to be resistant to glyphosate, they do not all develop resistance by the same physiological method. Our initial observations indicate that the plants have a similar tolerance to glyphosate as that of the horseweed that has now been confirmed resistant is several counties in Arkansas and in several states as well. Efforts will be made to try and contain this population and keep it from spreading to other areas; however, there are some early indications that this population may already be in one or two adjacent fields.

Our work on glyphosate tolerant common ragweed and other weed control issues in soybeans is partially funded by Arkansas soybean farmers, through the Arkansas Soybean Promotion Board. We greatly appreciate this support and without it, this work would not be possible.

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